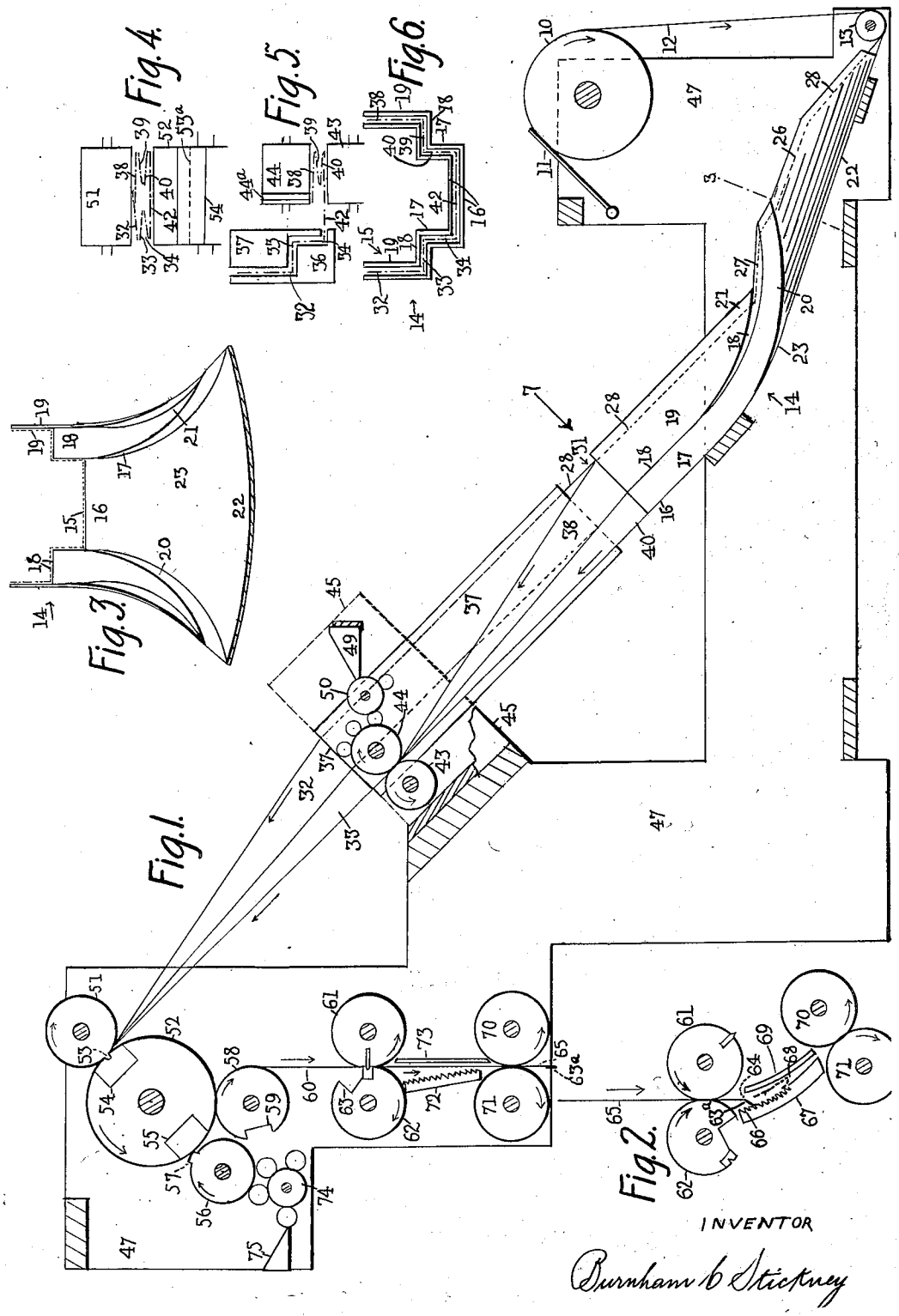
April 8, 1930. B. C. STICKNEY 1,753,354

PAPER BAG MAKING MACHINE

Filed Nov. 26, 1927 2 Sheets-Sheet 1



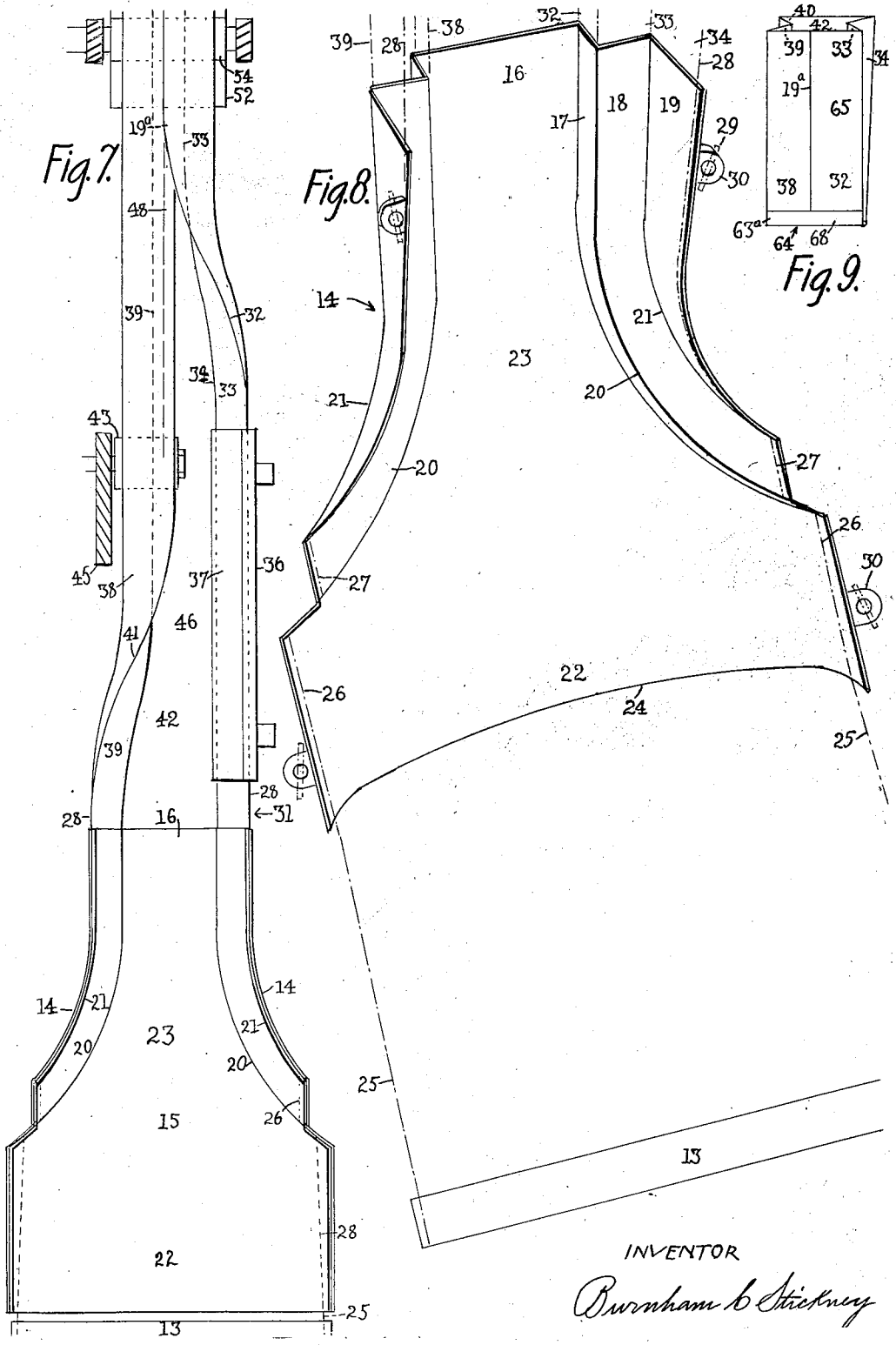
INVENTOR

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April 8, 1930. B. C. STICKNEY 1,753,354

PAPER BAG MAKING MACHINE

Filed Nov. 26, 1927 2 Sheets-Sheet 2



Patented Apr. 8, 1930 1,753,354

UNITED STATES PATENT OFFICE

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PAPER-BAG-MAKING MACHINE

Application filed November 26, 1927. Serial No. 235,784.

This invention relates to means for converting a paper-web into bags, especially those of the type in which the side edges of the bag are tucked in between the front and back thereof.

Certain of the features of the invention relate to means for first producing longitudinal pleats or flutes in the web. Certain of these pleats form the tucks of the bags. The fluting is done by means of a former through which the web is drawn, preferably in a dry condition. The web enters the former in flat condition, and is drawn over or through riffles that are provided in the former. The former is made up of one riffle-member which is under the web, and one riffle-member which is over the web. Said riffle-members are complementary, and co-operate to produce flutings or grooves at the side portions of the web. There is produced one complete groove at each side of the web, each groove being sufficiently spaced from the side edge of the web to leave an ungrooved side wall, these side walls finally becoming united at their edges to form the backs of the bags. Said grooves are spaced from each other to leave a broad expanse of smooth web, which finally forms the fronts of the bags. As the web emerges from the former, it has a trough-like form, of which the main bottom width is to be the front of the bag. From the sides of said width rise narrow strips which are to form portions of the side pleats or tucks in the bag, and from said strips there are ledges which extend outwardly and finally are to be folded down upon the strips to complete said tucks. From the ledges rise said side walls which eventually are folded over inwardly upon the tucks and form the longitudinally seamed backs of the bags.

The former includes means for fluting the paper-web from end to end, as a preliminary step to making the final pleats. The former includes two members between which the web is drawn lengthwise, one of said members having at its intake end supporting means over which the incoming web runs in smooth condition, and also has at its delivery end superposed interfitting sets of substantially parallel riffles extending in the direction of the travel of the web. The former also has an intermediate set of superposed interfitting diagonal riffles. The diagonal riffles at their delivery ends merge separately into said parallel riffles. Each member has the diagonal riffles, which curve gradually into the straight riffles, and it will be understood that the riffles in each member are complementary to the parallel and diagonal riffles in the other member. These complementary members are mounted so that the riffles of each member protrude into the corresponding depressions of the other member; and one of said members is slightly spaced from the other, just sufficiently to leave space for the web, so that the riffles co-operate to form a constricted undulating web-guiding passage permitting free advance of the web. The fluted web is shown as emerging from the former in the form of a trough with the upright side walls which are co-operatively to form the seamed backs of the bags, and with a broad bottom which is to form the fronts of the bags, and with intervening flutes or grooves which are to constitute the side pleats of the bags.

As the web advances from the former, it is preferably in open or unfolded trough-like condition, and one side portion of the web is temporarily maintained in such condition, while the other side of the web is folded down inwardly towards or over the middle of the web to form a back portion, with the effect of pressing a pleat between the front and the back of the web. At the same time there is applied to said back portion a streak of adhesive material, to come into use later in closing the back seam.

During this down-folding of one side portion of the shaped web, the other side is held

up in open condition by means of a stationary guide, which may extend past the devices which are used in folding back and applying adhesive to the other side portion of the web. Thereupon, as the web progresses, partly in folded-down compacted condition, and partly in open condition, the remaining open portion of the web is folded over downwardly and inwardly upon the main portion of the web, and its edge margin is pressed down upon the line of adhesive existing upon the previously folded-down side portion. This forms a complete tube, with its sides tucked in or pleated, preparatory to being eventually chopped off into bag lengths.

The complete tube is subjected to a cross-creasing pressure at the line which is to become the bottom closed edge of the completed bag-product. This is done by means of a pair of creasing rolls. A transverse streak of adhesive material is then applied to the back of the tube at a point adjoining the aforesaid crease. The flattened, longitudinally seamed and cross-creased tube is advanced between a pair of web-severing rolls. The web is severed near the creasing line, leaving a cross-flap projecting at an angle from the web-tube. The severed section drops in such a manner that its cross-flap, which is at the leading end, catches on a toothed or roughened surface and is stalled thereby, while the body of the bag is being forced down by the severing rolls, so that said flap collapses or folds over upon the bag. The leading end of the bag is then guided between a pair of compression rolls which complete the cross-seam or bottom of the bag and finish the product.

Other features and advantages will hereinafter appear.

In the accompanying drawings, all of which are diagrammatic,

Figure 1 is a section of a bag-making machine embodying the present improvements in one form, and illustrating the passage of the web through the machine and the various operations performed successively thereon.

Figure 2 shows another form of means for intercepting the flap at the leading end of the severed bag, and guiding it to the final pressing rolls.

Figure 3 is a perspective view of one of the complementary members which make up the former, for fluting the web longitudinally, or giving it its first shaping, preparatory to the pleat-pressing or folding-down operation. This view shows the former-member from its intake side.

Figure 4 is a diagram to illustrate the completion of the web-tube, with its side pleats or tucks and back seam.

Figure 5 is a diagram showing the folding down and compacting of the web on one side, and the application thereto of adhesive for the back seam, while the other side of the trough-like web is temporarily kept open by means of a stationary guide.

Figure 6 is a diagram to illustrate the trough-like shape of the web in transverse section as it leaves the former. It will be noted that the trough has a stepped configuration at its bottom corners, the steps having the effect of riffles, for producing the pleat-portions of the bag-product.

Figure 7 is a diagrammatic plan or elevation looking in the direction of the arrow "7" at Figure 1, and illustrating the steps of fluting the web and folding it down on one side and then folding it down on the other side to form the completed web-tube.

Figure 8 is a perspective view of one of the complementary members of the former, showing also the web in its passage therethrough.

Figure 9 is a diagrammatic view of the product.

The raw material is in the form of a spool 10 of paper-web, upon which presses a drag 11. The web is pulled off from the spool by means of feeding rolls presently to be mentioned. It passes down from the spool at 12 and around a roll 13, and enters in smooth condition a former, which is indicated generally at 14, whereby the web is narrowed and converted into a trough-like form. This transverse shaping is indicated by dot-and-dash lines at Figure 6; and it is also indicated at Figures 7 and 8. The former at its intake end may be a little wider than the web, but is substantially contracted in width at its delivery end, Figure 8. This former may be made up of superposed complementary trough-like riffled members, of which the outer one is indicated at 14 and the inner one at 15, Figure 6. These members are shown as being each shaped up from one piece of sheet-metal or other suitable material, without stretching the metal, and the web of paper conforms itself readily to the fluted shapes of the former-members illustrated, without objectionable wrinkling or puckering, while the web, as it enters the former, remains smooth. The paper-web will pass smoothly through the former and constantly assume the shape thereof. The flutings or riffles of the former-members are shown diagrammatically with square corners, but it will be understood that they may be rounded in practice to favor smooth progress of the web through the former.

At its delivery end, each former-member has a broad straight main delivery floor 16, from the sides of which rise narrow opposite vertical strips or walls 17, from the tops of which extend outwardly narrow opposite shelvings 18, from the outer edges of which rise broader opposite walls 19 to the top of the trough. Each of the co-operating former-members may be formed of a sheet of metal in substantially the same way, and one nests within the other, as seen diagrammatically

at Figure 6, the two nearly touching. The floors 16 are of the width of the completed bag-product, Figure 9. Each wall 17 and shelving 18, in each member, form a riffle. These four nesting riffles cooperate to produce the pleating along the side edges of the completed bag, Figure 9. The outer side walls 19 correspond with and aid in the shaping up of the side widths which are united by a seam 19^a to form the back of the product.

The web is drawn smoothly into this longitudinally pleated or fluted shape, from its original flat condition, by the aid of diagonal riffles 20, 21, which in each former-member merge directly into the straight flutings 17, 18, 19 at the delivery end of the former. These diagonal riffles 20, 21, oppositely placed on the right and left hand sides of each former-member, are situated between the delivery riffles 17, 18 and 19, and the smooth broad saddle 22, which may constitute the intake end of the former, and over which the web may travel in smooth condition. The diagonal riffles 20, 21 are preferably in the form of curves, which converge towards each other from the sides of the former, towards its delivery end, and give the former a triangular configuration. Owing to the forming from a one-piece metal sheet of these convergent curves (transverse to the general direction of the path of the web), and to their finally merging into the straight flutings (parallel with the general direction of travel of the web), the floor portion 16 of said metal sheet changes from its flat condition at its delivery end to a longitudinally bowed condition at 23 in the region of the riffle curves 20, etc., so that the direction of the web (viewed edgewise) is somewhat changed as it advances through this region 23, which is about midway of the length of the former. As seen at Figure 1, the web may enter the former and run obliquely along the saddle 22, and then at 23 it may curve upwardly (viewed edgewise), leaving the former at a more sharply inclined upward angle than at its entrance into the former. This design enables the paper-web to conform smoothly with the diagonal flutings 20, etc., and the terminal flutings 17—19, without danger of the paper becoming fouled or caught in the former. The whole shape of each member of the former may be similar to the shape that a sheet of dry paper could be made to take, and the curving of the diagonal flutings 20, etc., causes the paper-web to bend at the region 23. As the paper-web travels through the former, the broad side portions thereof dip first into and then out of the diagonal flutes 20, and finally travel uninterruptedly through the parallel delivery flutings 17, 18 and 19; the web being confined between the former-members and thereby compelled to travel generally into and out of said diagonal flutes and finally to take smoothly the journey through the straight delivery flutes.

Another result of the shaping of the straight and diagonal riffles in the metal sheet is that the saddle 22 of the former is given a somewhat broad cylindrical conformation, as indicated at 24. The roll 13, from which the web travels into the former, is preferably spaced considerably from the former, as indicated at Figure 8, so as to permit the web, which leaves the roll in straight condition, to conform itself to the broad cylindriform saddle 22. As indicated at Figure 8, the web narrows somewhat in passing over said saddle, due to its cylindrical shape. The portion of the web between the roll 13 and the former is indicated at 25.

The width of the web as it passes under the belly or inverted saddle 22 is indicated at 26. The side of the somewhat contracted web as it moves out of the first diagonal riffle 20 is indicated at 27; and where it leaves the former it is marked 28. At Figure 8, only the bottom former is shown, and it will be understood from the dot-and-dash lines that the web fits around and into all of the corners that are present in said bottom former, being compelled to do so by means of the top former nesting therein, which may be releasably held in closed working position by means of thumb-screws 29 in ears 30 formed upon the sides of the bottom member of the former (the top member having corresponding ears). It will be understood that the two former members are complementary, and that riffle parts of one protrude into corresponding depressions of the other, so that an undulating thin passage is formed for the web, said passage having only sufficient opening for the web to slip through freely. It is not essential that the flooring, the riffle walls or shelves, etc., be formed at right angles to one another as shown, as they may be made more obtuse for example. The part of the web which emerges from the floor 16 is to be the front of the bag, the part pleated by the flutes 17, 18 will become opposite side pleats of the bag, and the parts shaped up by the opposite sides 19 will co-operate to form the seamed back of the bag.

When the web in its narrowed trough-like straight condition emerges from the former at 31, the pleating 32, 33, 34 at one side thereof is temporarily preserved by means of a stationary guide, which may have two complementary parts 36, 37, Figures 5 and 7; while the corresponding web pleats 38, 39, 40 on the other side are automatically folded inwardly over and down, as indicated at 41, Figure 7, from an upstanding position to a cumbent position, flat upon the breadth 42 which constitutes the middle portion or face of the web. The folding and pressing down at this side is effected by means of a pair of feeding and pressing rolls 43, 44, between

which this side section of the web is led, Figure 1; said rolls being power-driven and suitably mounted upon bracket 45, fixed upon the framework 47 of the machine. At the same time a suitable streak of paste or other adhesive 48 is applied to the free edge portion of the back width 34, preparatory to completing presently the back seam of the bag. The paste may be supplied from a fountain 49, delivering to one of a set of distributing rolls 50, whereby a band 44ª of paste is deposited around the top roll 44. The distributing rolls 50 may be each only the width of the streak, as will be understood, while the roll 44 may be of the full length of this bag-width, so as to complete the creasing of the pleats at this side of the web, as will be understood.

The fluting 32, 33, 34 at the opposite side of the advancing web now emerges from the stationary guide 36, 37, and is folded (oppositely from the folding just described) inwardly over and down upon the main front width 42 of the web, with the free edge of the side width 40 overlapping the free edge of the previously folded down opposite side width 34, and covering up the streak of paste upon the latter, and the formation of the web into a tube is completed by passing the whole of the completely folded product through a pair of power-driven feeding and pressing or ironing rolls 52, the web now having the form, as will be understood from Figure 9, of a flat tube, with its sides tucked in and its back seamed.

It remains to sever the web into sections, each to form a complete bag, and also to fold up a flap from one end of the severed section, so as to form the bottom of the bag, and also to paste said folded-up bottom flap to the back of the bag. To these ends, the step is first taken of forming or at least starting the necessary cross-fold. Then a strip of paste or adhesive is applied transversely of the bag; then the bag is severed from the web; then the flap portion is folded over at the crease; and then the product is passed through a pair of feeding and pressure rolls from which it drops in completed condition.

The upper roll 51 is provided with a transverse rib 53 for its full width, for pressing the web-tube down at 53ª into a soft rubber or other pad 54 provided in the companion feed-roll 52, thus forming a substantial crease transversely of the bag, near one end thereof. The pad 54 may be formed of any material in order to get any desired nature of crease. The web-tube, still integral, passes around the roll 52, which may be double the diameter of 51, so that two creases are formed at each revolution of 52, a similar cushion 55 being provided oppositely from 54 upon said roll 52. Upon the back of the bag, and close to the creased line, a transverse streak of paste is applied by means of a roller 56. The latter has a paste-applying rib or surface 57, which is timed to strike the tube-web at such a point that the crease will be close to the paste and just between the same and the line along which the web is subsequently to be severed. The short portion of web-tube between the crease and the line of severance, is to constitute the bottom flap. The web-tube passes over a guide-roll 58, which is of assistance in stripping the transversely-pasted integral web from the paste-impresser 57; the roll 58 being for this purpose spaced around 52 a distance from the roll 56, so that the pasted web is carried for some distance around the roll 52 beyond the point where it has to be stripped from the paster 57. The feed-roll 58 has a transversely-notched portion 59, which coincides with the streak of paste upon the web-tube, so that said paste will not offset onto said roll 58.

The web then descends at 60 to a pair of web-severing rolls 61, 62 of ordinary type. These as well as the roll 58 (and others) are also feed-rolls and are power-driven; and 62 may have a notch 63 to clear the transverse line of paste upon the bag, said notch 63 being out of step with 59 in roll 58, whereby a constant pull may be maintained upon the web-tube, either by rolls 52, 58 or by rolls 61, 62, or by both pairs of rolls.

The line of severance of the web is a little in advance of the creased line effected by the knife or rib 53, and the crease remains in all of the plies of the web, not being eliminated by the described pressure of the feed-rolls. Consequently when the web is severed, and the flap forms between the line of severance and the line of creasing (indicated at 64, Figure 2), this flap 63ª springs a little to the left at Figure 2 from the straight line of the severed section of the web, which is indicated at 65. The leading end or edge of this flap-portion catches upon a rough surface which is placed transversely in the path of the web, and which may be formed in any suitable way, being illustrated as having transverse teeth or grooves 66 formed in a guide 67. The guide 67 diagonally extends across the normal path of the bag which is being fed straight down by the rolls 61, 62, Figure 2. The edge of the flap is caught and arrested by the teeth 66. The body of the bag is driven right down by means of the rolls, with the effect that the halted flap folds over upon the body of the advancing bag, as indicated in dotted lines at 68, Figure 2. A companion plate 69 co-operates with guide 67 to form a flap-folding chute through which the leading end of the bag is forced at an angle to the previous direction of advance of the bag. This chute leads to a pair of power-driven pressure-rolls 70, 71, which as well as some or all of the other rolls may be made of suitably stiff soft rubber, and give the bag its finishing pressure, so that the completed bag

drops from these rolls. The plate 69 prevents the leading portion of the bag from being forced aside while the flap is caught by the teeth, and the flap is forced to fold over upon the back of the bag, and the roll 70, 71 compresses the folded flap upon the previously-pasted transverse streak on the bag.

At Figure 1 the diagonal toothed guide 72 is shown straight, while the companion guide-plate 73 is also shown straight and vertical. Both forms of the toothed guides are in the path of the edge of the flap as the flap bends away from the body of the bag, owing to the creasing previously effected by the rib 53.

The application of paste upon the pasting surface 57 may be effected by means of a set of distributing rolls 74 receiving paste from a fountain 75.

Variations may be resorted to within the scope of the invention, and portions of the improvements may be used without others.

Having thus described my invention, I claim:

1. A former for longitudinally fluting a paper-web, including superposed co-operative members between which the web is drawn lengthwise, and from which it is delivered in narrowed fluted condition, said former having a relatively broad intake portion and a relatively narrow riffled delivery portion, one of said superposed members having at its intake portion means for supporting the incoming web in smooth condition, each of said members having between its intake and delivery ends a set of web-fluting riffles placed diagonally of the general direction of travel of the web and extending towards the delivery portion of the former, the other of said superposed members provided with riffles complementary to the aforesaid riffles, and means for supporting said members with the riffles of each member protruding into the corresponding depressions of the other member, and with one member slightly spaced from the other so that all of said riffles co-operate to form a constricted undulatory web-guiding passage permitting free advance of the web.

2. A former for longitudinally fluting a paper-web, including superposed co-operative members between which the web is drawn lengthwise, and from which it is delivered in narrowed fluted condition, said former having a relatively broad intake portion and a relatively narrow riffled delivery portion, one of said superposed members having at its intake portion means for supporting the incoming web in smooth condition, said former having a set of superposed interfitting diagonal riffles between its delivery end and its intake end, said diagonal riffles at their delivery ends curving gradually to the delivery riffles, and merging separately thereinto, the riffles of each of said co-operative members protruding into the corresponding depressions of the other member, and said members being slightly spaced apart so that the riffles co-operate to form a constricted undulating web-guiding passage.

3. In combination, a former for longitudinally pleating a paper-web for the purpose of making bags or the like, and means for drawing the web through the former to pleat or flute it from end to end, said former including superposed complementary riffled members having riffles co-operative to produce longitudinal flutings in the opposite side edge portions of the web, said riffles spaced apart to leave a broad unfluted portion between the flutings, said riffled members being each a substantial duplicate of the other and spaced apart just sufficiently to leave a passageway for the web, and each having the full width of the web at the intake, and narrowing to the delivery end of the former.

4. In combination, a former for longitudinally pleating a paper-web for the purpose of making bags or the like, and means for drawing the web through the former to pleat or flute it from end to end, said former including superposed complementary riffled members having riffles co-operative to produce longitudinal flutings in the opposite side edge portions of the web, said riffles spaced apart to leave a broad unfluted portion between the flutings, said former having a trough-like form to which the bottom width delivers the front of the bag, and having stepped riffles at the sides of said bottom width, to form pleats in the bag, and upstanding sides to aid in forming the back widths of the bag.

5. In combination, a former for longitudinally pleating a paper-web for the purpose of making bags or the like, and means for drawing the web through the former to pleat or flute it from end to end, said former including superposed complementary riffled members having riffles co-operative to produce longitudinal flutings in the opposite side edge portions of the web, said riffles spaced apart to leave a broad unfluted portion between the flutings, said former having a trough-like form of which the bottom width delivers the front of the bag, and having stepped riffles at the sides of said bottom width, to form pleats in the bag, and upstanding sides to aid in forming the back widths of the bag, one of said co-operative members having at its intake end supporting means over which the incoming web runs in smooth condition, said riffles converging substantially towards the general direction of the travel of the web through the former.

6. The method of forming a web-tube from a paper-web comprising converting an advancing paper-web into a longitudinal trough-like form with inturned step-like

tucks at its lower corners, then holding one side portion of the advancing web in such trough-like condition while folding down the other side of the web and pressing down the pleats or tucks, then folding down the opposite side of the advancing web to form the back and complete the web-tube, and pasting the web along the seam.

7. Means for manufacturing a paper-web into a succession of bags, including a former for giving longitudinal trough-like conformation to the web, means for folding the sides of the trough down to form the backs of the bags, means for cross-creasing the web at bag-length intervals, means for applying a transverse streak of adhesive material to the back of the web-tube adjoining the crease, means for severing the web at points a little spaced from said crease, to leave flaps to form the backs of the bags, means to intercept and halt the leading edges of said flaps, means to force each severed length to advance and cause the halted flap to fold back upon the body of the bag, and means to press the flap against the bag to effect its adhesion thereto.

8. A former for producing longitudinal pleats in a paper-web drawn therethrough, said former having a broad intake portion and a narrow delivery portion, said portions forming an obtuse angle to each other lengthwise of the web, and one portion curving to merge into the other portions, said former including superposed complementary interfitting channeled members, the channels forming riffles, portions of which extend transversely of the general direction of the travel of the web, said riffles curving inwardly from the sides of the former towards the delivery end thereof and at their delivery portions extending in the general direction of the travel of the web, said riffles being disposed on opposite sides of the central axial line of the former, each member of the former being so proportioned and shaped that a sheet of paper will conform itself readily thereto without tearing or straining, and the intake end of said former being convexly curved about an axis which extends in the general direction of the travel of the web, to form a belly or saddle over which the web flows smoothly into the former.

9. A former for longitudinally fluting a paper-web, including superposed co-operative members between which the web is drawn lengthwise, and from which it is delivered in narrowed fluted condition, said former having a relatively broad intake portion and a relatively narrow riffled delivery portion, one of said superposed members having at its intake portion means for supporting the incoming web in smooth condition, each former-member at its delivery end having a broad straight main delivery floor, from the sides of which rise narrow opposite vertical strips forming walls, narrow opposite shelvings extending outwardly from the tops of said strips, and opposite walls rising from the outer edges of said shelvings.

10. A former for producing longitudinal pleats in a paper-web drawn therethrough, said former having a broad intake portion and a narrow delivery portion, said portions forming an obtuse angle to each other lengthwise of the web, and one portion curving to merge into the other portion, said former including superposed complementary interfitting channeled members, the channels forming riffles, portions of which extend transversely of the general direction of the travel of the web, said riffles curving inwardly from the sides of the former towards the delivery end thereof and at their delivery portions extending in the general direction of the travel of the web, said riffles being disposed on opposite sides of the central axial line of the former, each member of the former being so proportioned and shaped that a sheet of paper will conform itself readily thereto without tearing or straining, the intake end of said former being convexly curved about an axis which extends in the general direction of the travel of the web, to form a belly or saddle over which the web flows smoothly into the former, each former-member at its delivery end having a broad straight main delivery floor, from the sides of which rise narrow opposite vertical strips forming walls, narrow opposite shelvings extending outwardly from the tops of said strips, and opposite walls rising from the outer edges of said shelvings.

11. A bag-forming machine, including means for forming flutes from end to end of a paper-web to serve as tucks in the completed bags, means for temporarily maintaining the pleats at one side in open condition, means for automatically folding down the pleats at the opposite side edge and applying a line of paste thereto, and means mounted at the delivery side of said maintaining means, for folding down the pleats on the other side of the web and completing the pasting operation.

12. A bag-forming machine, including means for forming flutes from end to end of a paper-web to serve as tucks in the completed bags, means for temporarily maintaining the pleats at one side in open condition, means for automatically folding down the pleats at the opposite side edge and applying a line of paste thereto, means mounted at the delivery side of said maintaining means, for folding down the pleats on the other side of the web and completing the pasting operation, and means for severing the completed web-tube into bag-lengths, the first folding-down means being arranged opposite said maintaining means and in advance of the second folding-down means.

13. The combination of web-fluting means, means for severing the web into bag-lengths, means for forming a flap at one end of each bag-length to assume a position at an angle to the direction of travel of the web, means for intercepting the leading edge of the flap while the bag-length is forced ahead, so that the flap folds back upon the advancing bag-length, and means for pasting the flap to the body of the bag.

14. The combination of web-fluting means, means for folding down the flutes of one side of the fluted web, means for applying paste thereto while the other side of the fluted web remains upstanding, means effective at a subsequent point in the path of the web for folding down the remaining side of the web and completing the pasting operation to form the back of the web-tube, means for severing the web into bag-lengths, means for forming a flap at one end of each bag-length to assume a position at an angle to the direction of travel of the web, means for intercepting the leading edge of the flap while the bag-length is forced ahead, so that the flap folds back upon the advancing bag-length, and means for pasting the flap to the body of the bag.

15. The combination with web-tube forming means, of a cross-creasing device effective upon the completed web-tube at bag-length intervals, a cross-pasting device effective close to the point of creasing, a web-severing device located near the point of creasing to leave a bottom flap between the severed edge and the crease, to assume a position at an angle to the body of the bag, means for arresting the leading edge of the flap and obstructing it while the bag advances, and pressure-rolls between which the bag is fed crease first.

16. A bag-making machine including means for fluting the paper-web longitudinally, power-rolls for folding down the pleats at one side of the web, means for applying a line of paste longitudinally to the web, a pair of power-rolls in advance of the first rolls for folding down the pleats at the opposite side border of the web and to conclude the pasting operation to form the web into a tube with its side edges tucked in, cross-creasing means upon the second pair of rolls, said second pair including a roll having a creasing rib, and also including a roll of double diameter having opposite creasing cushions, means co-operating with said large roll to apply a transverse line of paste upon the web-tube close to the line of creasing, a roll co-operative with said large roll to strip the web-tube from the pasting device, a pair of feeding and web-severing power rolls, cutaways being provided in said stripping roll and also in one of said severing rolls to clear the transverse line of paste upon the tube, said cutaways being out of step, said web-severing rolls being effective upon the tube a short distance from the line of creasing to form a back flap to assume a position at one side by reason of its creased condition, an obstruction for said leading edge of said flap to hold it while the severed section is being advanced, said obstruction in the form of a toothed plate placed transversely in the path of said flap, a plate cooperating therewith to form a guiding chute for the severed section, and a final pair of pressure-power-rolls for closing the flap upon the body of the bag.

BURNHAM C. STICKNEY.